

Application

OF

JAMES GORDON MACGREGOR,

M. A., D. Sc., F. R. S. E., F. R. S. C.,

*Munro Professor of Physics in Dalhousie University,
Halifax, N. S.,*

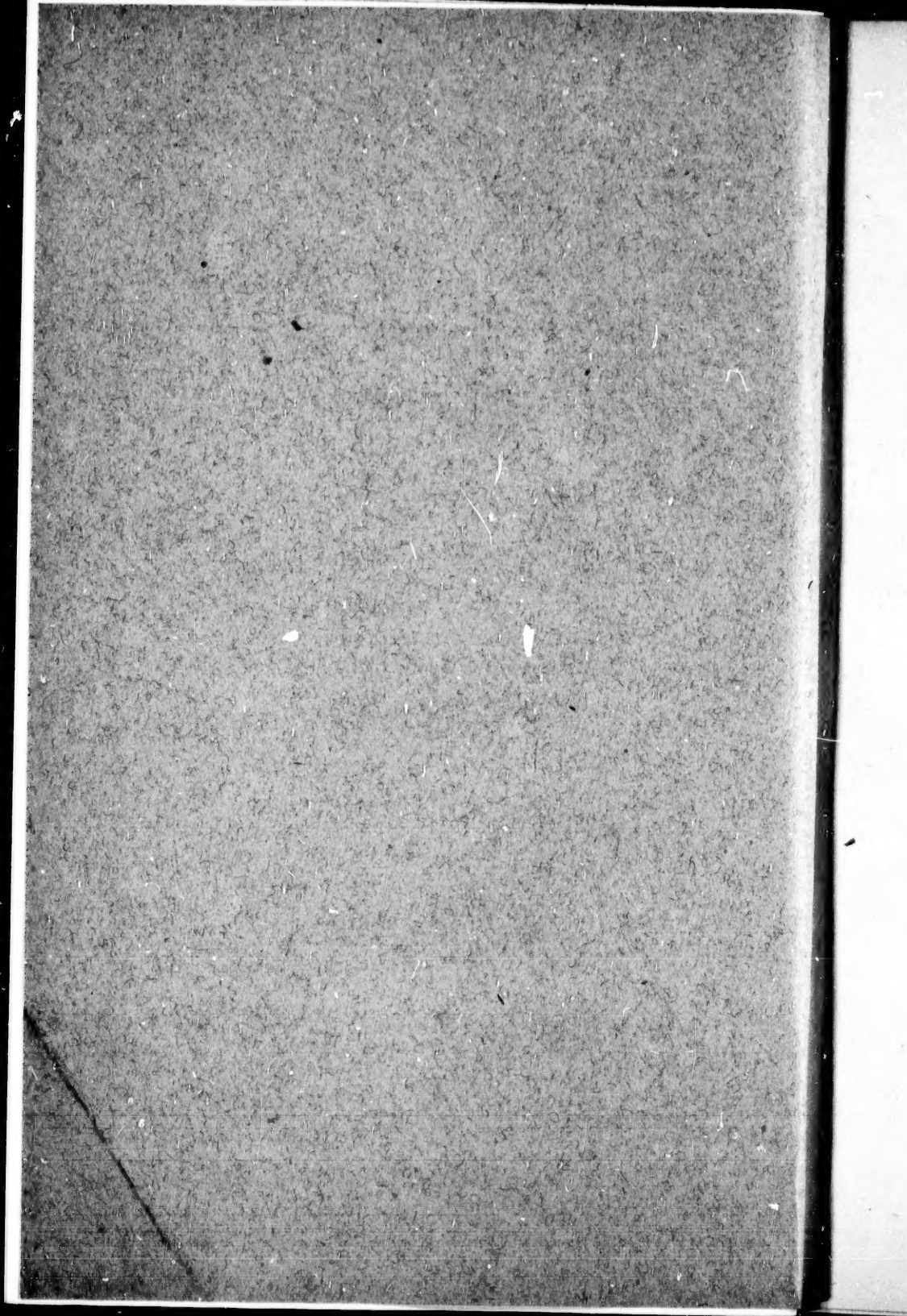
FOR THE

CHAIR OF EXPERIMENTAL PHYSICS

IN

MCGILL UNIVERSITY,

MONTREAL



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TO THE BOARD OF GOVERNORS

OF

McGill University.

GENTLEMEN :

I beg to offer myself as a candidate for the Professorship of Experimental Physics in McGill University.

I am a native of Halifax, N. S., and entered Dalhousie College as an undergraduate in 1867, at the age of fifteen. After taking the highest academic position provided for by the regulations of the College at that time, I graduated as Bachelor of Arts in 1871. Three years afterwards I proceeded to the Degree of Master of Arts.

In 1871 I was awarded the Canadian Gilchrist Scholarship by the Examiners of the London University, and decided to enter the B. Sc. course of that University, and to study in Edinburgh. There I spent the next three years, attending the Science classes, and working in the Natural Philosophy Laboratory under Professor Tait. Encouraged by my success in the Physical and Biological classes, I undertook to read for Honours in the departments of Experimental Physics and Biology. My health, however, broke down, and I yielded to the urgent advice of the Hon. D. McN. Parker, M. D., of Halifax, and Professor Grainger Stewart, M. D., of Edinburgh, not to incur the risk involved in the strain of the Honours Examinations. In both the 1st and the 2nd B. Sc. Examinations I was placed in the first division of the Pass List. I graduated in 1874 as Bachelor of Science.

I spent the next two years at the University of Leipzig, continuing the study of Physics, and more especially of

Electricity, under Professor G. Wiedemann, who was assisted in his Laboratory by his son, Dr. (now Professor) E. Wiedemann.

In 1876 I graduated as Doctor of Science at the University of London, in the branch embracing Electricity as principal subject, and Electro-Chemistry, Heat and Magnetism as subsidiary subjects.

In the same year I was appointed Lecturer on Physics in this College, and in 1877 Chief Physical Master in Clifton College, England. At Clifton College I conducted classes in Mathematical and Experimental Physics, and in Physical Laboratory work.

In 1879 I was appointed to the Munro Professorship of Physics in this College. My work, as the incumbent of this chair, has included both elementary and advanced courses of lectures in almost all departments of both Mathematical and Experimental Physics. I have also introduced Practical Laboratory instruction, first into the Honours Course, and lately into the ordinary B. A. and B. Sc. Courses. I have also conducted classes for training students, intending to become teachers, in illustrative experimentation. For the present organisation of my classes, I beg to refer you to the Calendar of the College, copies of which I send herewith.

For some years I have performed the duties of Secretary and Registrar of the Faculty of Arts, and have been entrusted by the Senate with the editing of the Calendar.

During my residence in Halifax I have endeavoured to do what I could in promoting educational reforms and in assisting in the management of Educational and Scientific Institutions.

Both at Clifton and at this College I have been hampered in original research by lack of instruments of precision. I have, however, done what I could with the apparatus at my disposal; and during my vacations I have, on several occasions, through the kindness of Professor Tait, been able to make use of the rich stores of the Natural

Philosophy Laboratory of the University of Edinburgh. I have been aided also by a grant from the Government Grant Committee of the Royal Society of London, made to enable me to complete a research which is at present in progress. A list of the more important of the scientific papers which I have published, is appended to this letter. I send copies of them herewith in cases in which I still have copies on hand.

I have published one book: "An Elementary Treatise on Kinematics and Dynamics," a copy of which I send herewith. I beg to submit for your perusal extracts from such reviews of this book as have reached me.

I am a Fellow of the Royal Society of Edinburgh, a Member of the Physical Society of London, a Fellow of the Royal Society of Canada, and President of the Nova Scotian Institute of Science.

I have the honour to submit for your consideration, testimonials from some of the distinguished Professors under whom I studied in Edinburgh and Leipzig, from the Heads of Colleges in which I have been a teacher, from former and present colleagues, teaching subjects closely related to Physics, from fellow-students who have distinguished themselves in the department of Physics, and from other persons whose opinion seemed to me of value, and with whom I am either personally acquainted or have become acquainted by correspondence.

I have the honour to be,

Gentlemen,

Your obedient servant,

J. G. MACGREGOR

DALHOUSIE COLLEGE,
HALIFAX, N. S., *May 30th, 1890.* }

LIST OF PRINCIPAL PUBLICATIONS.

SCIENTIFIC PAPERS.

- On the Electrical Conductivity of certain Saline Solutions. (In conjunction with J. A. Ewing.)—Trans. Roy. Soc. Edin., 1873. (See also Wiedemann's *Die Lehre von der Elektrizität* I, 589; Mascart and Joubert's *L'Electricité et le Magnétisme*, II, 848; *Encyclopædia Britannica*, Art. Electricity, p. 50; F. Jenkin's *Electricity and Magnetism*, p. 260; Everett's *Units and Physical Constants*, p. 161; Hospitalier's *Formulaire Pratique de l'Electricien*.)
- Note on the above.—Proc. Roy. Soc. Edin., 1874-75.
- On the Electrical Conductivity of Stretched Silver Wires.—Proc. Roy. Soc. Edin., 1875-76. (See also Wiedemann's *Beiblätter*, Vol. I.; *Fortschritte der Physik*, 1876; Silliman's *Journal*, Ser. 3, vol. XI; *Naturforscher*, 1876; Wiedemann's *Die Lehre von der Elektrizität*, I, 521.)
- On the Electrical Conductivity of Nickel. (In conjunction with C. M. Smith.)—Proc. Roy. Soc. Edin., 1875-76.
- On the Thermoelectric Properties of Cobalt. (In conjunction with C. G. Knott and C. M. Smith.)—Proc. Roy. Soc. Edin., 1876-77. (See also Wiedemann's *Beiblätter*, Vol. II.; *Fortschritte der Physik*, 1878; Wiedemann's *Die Lehre von der Elektrizität*, II, 301.)
- Notes on the Volumes of Solutions. (In conjunction with J. A. Ewing.)—Reports Brit. Asso., 1877. (See also *Nature*, 1877; *Fortschritte der Physik*, 1877.)
- On the Thermoelectric Properties of Charcoal and of certain Alloys, with a Supplementary Thermoelectric Diagram. (In conjunction with C. G. Knott.)—Trans. Roy. Soc. Edin., 1878. (See also Wiedemann's *Beiblätter*, Vol. III.; *Fortschritte der Physik*, 1878 and 1879; Wiedemann's *Die Lehre von der Elektrizität*, II, 301.)

- On the Variation with Temperature of the Electrical Resistance of Wires of Certain Alloys. (In conjunction with C. G. Knott.)—Trans. Roy. Soc. Edin., 1880. (See also Wiedemann's Beiblätter, Vol. VI.; Fortschritte der Physik, 1881; Wiedemann's Die Lehre von der Elektrizität, I., 516.)
- On the Absorption of low Radiant Heat by Gaseous Bodies.—Proc. Roy. Soc. Edin., 1882-83. (See also Wiedemann's Beiblätter, Vol. VIII.)
- On the Measurement of the Resistance of Electrolytes by means of Wheatstone's Bridge.—Trans. Roy. Soc. Can., 1882. (See also Wiedemann's Beiblätter, Vol. VIII.; Fortschritte der Physik, 1882; Wiedemann's Die Lehre von der Elektrizität, IV., 657.)
- On Experiments showing the Electromotive Force of Polarisation to be independent of the Difference of Potential of the Electrodes.—Trans. Roy. Soc. Canada, 1883. (See also Wiedemann's Beiblätter, Vol. VIII.; Fortschritte der Physik, 1883; Wiedemann's Die Lehre von der Elektrizität, IV., 1299.)
- On the Resistance to the passage of the Electric Current between Amalgamated Zinc Electrodes and Solutions of Zinc Sulphate.—Trans. N. S. Inst. Nat. Sci., 1883. (See also Wiedemann's Beiblätter, Vol. VIII.; Fortschritte der Physik, 1883; Wiedemann's Die Lehre von der Elektrizität, IV., 1302.)
- On the Density and the Thermal Expansion of Solutions of Copper Sulphate.—Trans. Roy. Soc. Canada, 1884. (See also Wiedemann's Beiblätter, Vol. IX.)
- On the Density of Weak Aqueous Solutions of Certain Salts.—Trans. Roy. Soc. Canada, 1885. (See also Chemical News, 1887; Wiedemann's Beiblätter, Vol. XI.; Mendelejeef's Etude des Dissolutions Aqueuses, Chap. VIII.)
- On the relative Bulk of certain Aqueous Solutions and their constituent Water.—Trans. N. S. Inst. Nat. Sci., 1886. (See also Wiedemann's Beiblätter, Vol. XI.)

On the Measurement of Temperature and Time.—Trans. N. S. Inst. Nat. Sci., 1887. (See also Wiedemann's Beiblätter, Vol. XIV.)

A Table of Cubical Expansions.—Trans. Roy. Soc. Can., 1888.

On Carnot's Cycle in Thermodynamics.—Trans. N. S. Inst. Nat. Sci., 1889. (See also Wiedemann's Beiblätter, Vol. XIV.)

On the Variation of the Density with the Concentration of weak aqueous Solutions of certain Salts.—Trans. Roy. Soc. Can., 1889.

Communicated but not yet published.

On the Density of Solutions of certain Hydroxides.—N. S. Inst. Nat. Sci.

On a noteworthy case of the Occurrence of Ice in non-crystalline Columns.—N. S. Inst. Nat. Sci.

On the Density of Weak Aqueous Solutions of certain Sulphates.—Roy. Soc. Canada.

On a Test of Ewing and MacGregor's Method of measuring the electrical Resistance of Electrolytes.—Roy. Soc. Canada.

PAMPHLETS.

Technical Education Abroad and At Home. Halifax, 1882. Address delivered at the opening of the Twenty-Sixth Session of the Nova Scotian Institute of Natural Science. Halifax, 1888.

Address delivered at the opening of the Twenty-Seventh Session of the Nova Scotian Institute of Natural Science. Halifax, 1890.

On Calculus Dodging and other Educational Sins. St. John, N. B., 1890.

BOOK.

An Elementary Treatise on Kinematics and Dynamics. Crown 8vo., xvi + 512. Macmillan & Co., London and New York.

Extracts from Reviews of "Kinematics and Dynamics."*

(From Nature of 16th February, 1888.)

"The logical order of arrangement has been carefully attended to in this book, Part I. on 'Kinematics' building up a new subject on the foundation of Euclid's Axioms in conjunction with the idea of the variables, such as velocity and acceleration, due to the flow of the time.

Except for the parts criticized above, on the units of weight, mass and force, the present treatise shows that the author has read, with profit and discrimination, the most recent treatises on Dynamics; he has produced a very useful work, suitable for instruction in technical colleges, and likely also to prove a necessary corrective to the very abstract treatment of the subject of mechanics too common in the character of University instruction.

A. G. GREENHILL.†

(From The Educational Times, of November, 1887.)

"A special feature of this part of the work" [on Translation] "is the use of the language of quaternions,—*speed*, for example, being treated as a *scalar* and *velocity* as a *vector*; and the importance of this method fully justifies the prominent position which Dr. MacGregor has assigned to it. * * * The Chapters on Rotation, Motion of Rigid Systems and Dynamics of a Rigid System form a useful introduction to a more extended study of Rigid Dynamics. The problems and exercises seem to be well chosen, and the book is provided with a useful index. Altogether it will fully repay a careful study."

(From The Spectator, of April 21st, 1888.)

"In 'An Elementary Treatise on Kinematics and Dynamics,' by Professor MacGregor, of Dalhousie College, Halifax, Canada, we have the most recent able attempt to improve the study of motion and matter. * * * Under Kinematics there is some well-written matter under the heads 'Rotation,' 'Motion of Rigid Systems,' and 'Strains.' Under Dynamics we might also mention the chapters headed 'Dynamics of a Particle,' 'Dynamics of Rigid Bodies,' and 'Elastic Solids and Fluids.'"

* All the reviews which have reached me are here quoted from. In all cases all general expressions of opinion are given, but detailed criticism, whether favorable or unfavorable, is as far as possible omitted.—J. G. M.

† Professor of Mathematics in the Royal Artillery Institution, Woolwich.

(From The Schoolmaster, of October 29th, 1887.)

"This book adopts the modern phraseology and classifications introduced by Thomson and Tait. * * * It is fuller than most elementary books with similar title on the treatment of the following subjects :—Constrained Motion, Rotation, Energy and Potential, Strings. The Dynamics is not confined to that of a Particle—about seventy pages being devoted to the Dynamics of a Rigid Body, and about eighty more to Elastic Solids and Fluids. The chapter on Harmonic Motion is very clear and complete."

(From The Athenæum, of January 21, 1888.)

"Students thus equipped" [with some knowledge of the principles of mechanics acquired in the ordinary manner] "will find his philosophic and well-reasoned treatise very useful, though for quite beginners we consider it too abtruse."

(From The Nation, of June 28th, 1888.)

"This is, in many respects, a remarkable book. It is, as Bishop Whateley was fond of saying, 'paradoxical yet true,' that the work is full of novelties, yet contains little that is new. * * * But with all its peculiarities, we strongly recommend the work to the perusal of all those engaged in teaching Mechanics. It is evidently the product of long and careful labor and thought by one who thoroughly understands his subject. It takes a very comprehensive view of the science; everything is presented in a strictly scientific form, and it leaves on the reader's mind a strong impression of consistency and unity of plan. Its constant use of the method of limits forms an excellent introduction to those portions of the science in which the employment of the Calculus becomes indispensable. A very good index adds to the value of the work."

(From The Madras Christian College Magazine, of September, 1888.)

"The work differs from most other works of its class in the exhaustive treatment of many parts of the subject which have hitherto received much less attention than their importance demands. * * * Personal acquaintance with Mr. MacGregor's work convinces us that there was no ground at all for the criticisms of Professor Greenhill" [on the units of mass, weight and force]. "Our author's use of the words *pound* and *pound-weight* is perfectly consistent, and his meaning is always clear. * * * In conclusion, though we should hardly be prepared to follow the author in every particular, either in his methods

or in his order of treatment, we have no hesitation in recommending his work as the most exhaustive, methodical and trustworthy elementary treatise on the subject with which we are acquainted."

(From The Educational Review (St. John, N. B.) of February, 1888.)

"The special characteristic of this work, as it strikes us, is its accuracy and conciseness of definition, its severe unrepeatable logical progression, and the neat symbolic notation or expression of abstruse mathematical conceptions. * * * Its use as a text-book in Dalhousie proves that in this department at least the Nova Scotian University can rank with some of the most famous in the world."

(From The Dalhousie Gazette (Halifax, N. S.) of December 17th, 1887.)

"The work is fortified and its principles and methods, at every important stage, set forth, in the most admirable collections of examples or exercises that we have anywhere seen on the same subject. Indeed, had the work no other merit than this, it was well worthy of publication. Its definitions are careful and exact, even to the point sometimes of being almost obscure,—at least at first presentation. And its methods of investigation and treatment evince such a command of philosophic generalization as to place Professor MacGregor high up in the ranks of scientific physicists. * * * Professor MacGregor is not the only one, but is the best volunteer to fill this gap" [between the elementary text-book and such treatises as that of Thomson and Tait] "that we have seen."

(From the Proceedings of the Physical Society of Berlin, Feb. 17th, 1888.—Translation.)

"The work discusses, with the aid of Elementary Mathematics, the whole of pure Mechanics. Although it assumes less mathematical knowledge than German works of the same kind require, nevertheless the subject is treated in such completeness that every essential question, which makes the development of conceptions necessary, is discussed; only those investigations are omitted which involve knowledge of Analytical Geometry and the Infinitesimal Calculus. * * In the presentation of the subject, the chief weight is laid on the logical development of the ideas and of the relations of the individual parts among one another; the author wishing thereby to destroy the impression of fragmentariness which many elementary text-books produce. To indicate at once to the eye the essential parts of the

doctrinal structure, he has used two kinds of type, the larger for the general discussions, and the smaller for the numerous examples and exercises introduced for purposes of illustration. These exercises, scattered through the whole book, the number of which exceeds 800, form a very valuable portion of the book. In bringing them together the author has used the rich collections which are available for this branch of Mathematics in England, but he has also added many new ones. The examples serve often, moreover, to make the definitions of the conceptions clear and familiar."—*Extract from a communication by Professor Dr. E. Lampe.*

(From the Beiblätter zu den Annalen der Physik und Chemie, Vol. XII., p. 400.—
Translation.)

"The explanations are clear, and are illustrated by numerous examples, as well as by exercises which facilitate substantially the mastering of the problems."

TESTIMONIALS.

I.

From P. G. TAIT, M. A., Sec. R. S. E., Honorary Fellow of St. Peter's College, Cambridge, and Professor of Natural Philosophy in the University of Edinburgh; Joint Author of Thomson and Tait's "Treatise on Natural Philosophy," etc.; Author of "A Sketch of Thermodynamics," "Recent Advances in Physical Science," etc.

I have no hesitation in most warmly recommending Professor MacGregor as a thoroughly qualified candidate for the new Chair of Physics in the McGill College. From what I saw of him as a student in my Laboratory, I was quite prepared for his subsequent distinguished career; and I do not think that the authorities of the McGill College could launch a new Chair under safer, sounder, or more energetic direction than his.

P. G. TAIT, M. A., Sec. R. S. E.,

*Hon. Fellow of St. Peter's Coll. Camb., Prof. of Nat. Phil.
in the Univ. of Edinburgh.*

COLLEGE, EDINBURGH,
30th April, 1890.

II.

From D. H. MARSHALL, M. A., F. R. S. E., Professor of Physics, Queen's University, Kingston, Ont., Author of "Introduction to the Study of Dynamics," etc., Formerly Assistant in the Natural Philosophy Laboratory of the University of Edinburgh.

Professor J. G. MacGregor informs me that he is a candidate for the Chair of Experimental Physics in McGill College. With Prof. MacGregor and his work I have been intimately acquainted for the last ten years. I remember well the enthusiastic worker in the magnificent Physical Laboratory of Edinburgh University where for three years Prof. MacGregor worked so successfully under the leadership of Prof. Tait, than whom perhaps he could not have had a better leader in the whole range of Physics. Prof. MacGregor's eminence secured for him, soon after graduation his present position and the Fellowships of the Royal Societies of Edinburgh and Canada. The papers he has contributed to these Societies and his recently published work on Kinematics and Dynamics are sufficient evidence of his perfect mastery over the subjects he desires to teach in McGill College.

Prof. MacGregor's great enthusiasm in teaching his favourite subjects and his bright and honourable character make me feel that the patrons of the Chair will find it difficult to get a better candidate.

D. H. MARSHALL.

QUEENS UNIVERSITY, KINGSTON,
2nd May, 1890.

III.

*'From the late SIR C. WYVILLE THOMSON, F. R. S., Regius Professor
of Natural History in the University of Edinburgh.*

(GIVEN ON A FORMER OCCASION.)

Mr. J. Gordon MacGregor took a high place, receiving a first-class certificate of merit, in my Natural History class in the year 1871. Although I do not feel myself in a position to offer an opinion as to his special qualifications for the post of Lecturer on Experimental Physics in University College, Bristol, I have much pleasure in stating that I believe a man of his general capacity and fluency and clearness of expression, will prove a valuable teacher in any institution with which he may become connected. Mr. MacGregor's special attainments will doubtless be referred to by others with better opportunities of judging.

C. WYVILLE THOMSON, F. R. S.,

*Regius Professor of Natural History in the
University of Edinburgh.*

20 PALMERSTON PLACE, EDINBURGH,

June 23rd, 1876.

IV.

*From the late J. H. BALFOUR, M. D., F. R. S., Sec. R. S. E.,
Professor of Medicine and Botany in the University of Edinburgh.*

(GIVEN ON A FORMER OCCASION.)

Mr. J. G. MacGregor has been known to me for several years as a zealous and enthusiastic student of science. He has devoted his attention specially to Physical Science, and has acted as assistant to Professor Tait in the Physical Laboratory of the University of Edinburgh.

He has submitted many important communications to the Royal Society of Edinburgh.

I have great pleasure in recommending him as being well qualified for the appointment of Professor of Experimental Physics in the New University College, Bristol.

J. H. BALFOUR, M. D., F. R. S., Sec. R. S. E.,

Professor of Medicine and Botany in the University of Edinburgh.

ROYAL BOTANIC GARDEN, EDINBURGH,

June 20th, 1876.

V.

From ARCHIBALD GEIKIE, LL. D., F. R. SS. L. & E., F. G. S., *Director-General of the Geological Survey of the United Kingdom, formerly Murchison Professor of Geology and Mineralogy in the University of Edinburgh.*

(GIVEN ON A FORMER OCCASION.)

Mr. J. G. MacGregor attended the class of Geology and Mineralogy in this University, and showed great promise as a student. I had opportunities of judging of his powers of observation, which seemed to me to be such as to mark him out as one who would do good service as an original worker in science, and to fit him in no common degree for the task of expounding scientific progress to others. I believe him to be well qualified for the post to which he aspires.

ARCH. GEIKIE, LL. D., F. R. S.,

Murchison Professor of Geology and Mineralogy in the University of Edinburgh, and Director of H. M. Geological Survey of Scotland.

EDINBURGH,

June 22nd, 1876.

VI.

From the REV. HENRY CALDERWOOD, LL. D., Professor of Moral Philosophy in the University of Edinburgh.

Professor J. G. MacGregor, Dalhousie College, Halifax, being a candidate for the Chair of Experimental Physics in McGill College, Montreal, I gladly bear testimony in his favour on the ground of personal qualities fitting him highly for Professorial duty.

When he left our University, I bore testimony in his favour which I now repeat, as indicating the judgment I had formed of his ability and character :

“ Mr. MacGregor's position and high reputation in this University are those of a gentleman who gives full promise of efficiency in the position of a Professor of Natural Philosophy. His success at all stages of his University course has made this clear, even to those who, like myself belong to a department of work different from that to which Mr. MacGregor has devoted himself.

As a student of Moral Philosophy he attracted my attention by his breadth of thought, associated with keen critical faculty. He could have succeeded largely in the study of Philosophy if Physical Science had not absorbed too greatly his interest and time. But such study as he has given to Mental Philosophy appears to me a great gain for one who is to be a teacher of Science.

Mr. MacGregor's manner, style of address, openness of disposition, and promptitude in expression of his thoughts, all mark him out as possessing the natural gifts of a teacher.”

H. CALDERWOOD,

Mor. Phil. Prof.

UNIVERSITY OF EDINBURGH,
1st May, 1890.

VII.

From GEHEIMRATH GUSTAV WIEDEMANN, PH. D., M. D., Professor of Physics and Director of the Physical Institute of the University of Leipzig, Editor of "Annalen der Physik und Chemie," Author of "Die Lehre von der Elektrizität," etc., Honorary Member of the Physical Society of London.

Es freut mich das günstige Zeugniß welches ich Herrn James Gordon MacGregor am 15ten Juni 1876, ertheilte, auch jetzt in vollem Maasse bestätigen zu können. So weit es die ihm zur Verfügung stehenden Mittel gestatteten, hat er seitdem mit Umsicht, grossem Fleiss und vollem Verständniß, die Wissenschaft gefördert, und es ist in hohem Grade zu wünschen dass ihm im Interesse der Wissenschaft selbst Gelegenheit geboten werde seine Bestrebungen fortzusetzen.

Ich bin der festen Ueberzeugung, dass Herr MacGregor die vacante Professur am McGill College in Montreal nicht nur auf das beste versehen, sondern auch neben seiner eigentlichen Lehraufgabe ihr durch werthvolle wissenschaftliche Leistungen eine besondere Bedeutung verleihen würde.

Ich erlaube mir deshalb Herrn MacGregor für diese Professur auf das angelegentlichste zu empfehlen.

GEH. RATH PROFESSOR DR. G. WIEDEMANN,

Director des physikalischen Instituts der Universität Leipzig.

LEIPZIG, 5th Mai, 1890.

(TRANSLATION.)

It gives me much pleasure to be able now to confirm completely the favourable testimonial which I gave Mr. James Gordon MacGregor on the 15th June, 1876. So far as the appliances at his disposal have permitted, he has since then advanced science, with intelligence, great diligence and full understanding, and it is highly desirable that in the interest of Science itself, opportunity should be given him to continue his exertions.

I am firmly convinced that Mr. MacGregor would not only discharge the duties of the vacant Professorship at

McGill College, Montreal, in the best manner, but would also, while discharging his duties as a teacher, give it a special importance by valuable scientific work.

I would, therefore, most urgently recommend Mr. MacGregor for this Professorship.

GEHEIMRATH PROFESSOR DR. WIEDEMANN,

Director of the Physical Institute of the University of Leipzig.

LEIPZIG, 5th May, 1890.

The following is the testimonial referred to by Professor Wiedemann :

Herr James Gordon MacGregor, aus Halifax, Canada, hat während zweier Semester* meine Vorlesungen gehört und sich in meinem Laboratorium mit physikalischen Untersuchungen beschäftigt. Er hat dabei nicht nur durch sein anspruchloses und tüchtiges Wesen persönlich meine Zuneigung gewonnen, sondern sich auch durch seinen grossen Fleiss, seine ganz besondere Geschicklichkeit und Umsicht in der Ausführung der experimentellen Arbeiten als ein talentvoller und hoffnungsreicher junger Physiker erwiesen.

PROFESSOR DR. G. WIEDEMANN,

Director des Physikalisch-Chemischen Laboratoriums der Universität Leipzig ; p. t. Decan der Philosophischen Facultät.

LEIPZIG, den 15ten Juni, 1876.

(TRANSLATION.)

Mr. James Gordon MacGregor, of Halifax, Canada, has attended my lectures for two sessions*, and pursued physical investigations in my laboratory. In doing so, he has not only won my personal esteem by his modesty and ability, but by his great diligence and his very unusual skill and resource in carrying out experimental work, he has also shown himself to be a talented and promising young Physicist.

PROFESSOR DR. G. WIEDEMANN,

Director of the Laboratory of Physical Chemistry of the Leipzig University, and pro tem. Dean of the Philosophical Faculty.

LEIPZIG, June 15th, 1876.

* I spent three Semesters in Professor Wiedemann's Laboratory.—J. G. M.

VIII.

From EILHARD WIEDEMANN, PH. D., Professor of Physics in the University of Erlangen, Editor of the "Beiblätter zu den Annalen der Physik und Chemie."

Wenn ich mir erlaube über die Leistungen von Herrn Professor MacGregor ein Urtheil zu fällen, so darf ich die Berechtigung dazu wohl aus zwei Umständen herleiten, einmal habe ich persönlich Gelegenheit gehabt denselben bei wissenschaftlicher Arbeit zu sehen und dann bin ich als Redacteur der Beiblätter mehr als ein anderer genöthigt, die wissenschaftliche Bewegung in der Physik in ausgiebigstem Maasse zu verfolgen.

Es gereicht mir nun zur allergrössten Freude, Herrn MacGregor in jeder Weise und nach jeder Richtung hin empfehlen zu können. Er besitzt ein hervorragendes experimentelles Geschick und erfasst mit grossem Eifer und Verständniss die ihm entgegnetretenden Probleme. Dadurch dass er sowohl in England, vor allem unter der vorzüglichen Leitung von Herrn Prof. Tait, als auch in Deutschland seine Studien gemacht hat, hat er sich einen umfassenderen Blick erworben und hat die Art des Arbeitens zweier verschiedenen Nationen kennen gelernt; dabei hat er sich auch eine hervorragende Kenntniss der wissenschaftlichen Litteratur erworben.

Sein Buch über Kinematik und Dynamik zeugt von grosser Klarheit in der Darstellung und Lehrbegabung. Seine durchweg tüchtigen Arbeiten haben die Wissenschaft gefördert. Was bei denselben besonders wolthuend berührt, abweichend von denen vieler anderer Gelehrten, ist, dass sie nicht einseitig nur ein Gebiet etwa nur das elektrische behandeln, sondern dass sie sich über die verschiedensten Gebiete der Physik und mathematischen Physik verbreiten. Dadurch ist auch dafür Gewähr geleistet, dass die Kenntnisse von Herrn MacGregor vielseitig sind, was für einen Docenten von grösster Bedeutung ist. Herr MacGregor ist im Stande

gewesen, diese Arbeiten schon mit sehr mässigen Hilfsmitteln zu vollenden. Die Wissenschaft sowohl, als auch seine Schüler können daher gewiss noch weit vorzüglicheres erwarten, wenn ihm, durch Berufung in eine grössere Stellung auch reichlichere Hilfsmittel zu Gebote stehen. Dies ist daher sowohl im allgemeinen wissenschaftlichen Interesse als auch in dem seines Landes in hohem Grade wünschenswert.

PROFESSOR DR. EILH. WIEDEMANN,

Redacteur der Beiblätter zu den Annalen der Physik und Chemie

ERLANGEN, 3 Mai, 1890.

(TRANSLATION.)

If I venture to express an opinion on Professor MacGregor's work, I can find my justification for doing so in two circumstances; first, I have had personally the opportunity of seeing him engaged in scientific research, and secondly, as Editor of the "Beiblätter," I require, more than most men, to follow the progress of Physical science in the most thorough manner.

It gives me the very greatest pleasure to be able to recommend Mr. MacGregor in every respect and from every point of view. He possesses extraordinary experimental skill, and grapples with the problems which he sets himself to solve, with great enthusiasm and intelligence. As he has pursued his studies both in England (above all under the excellent guidance of Professor Tait), and in Germany, he has gained more comprehensive views and has learned the methods of research of two different nations. He has gained in addition an unusual knowledge of scientific literature.

His book on Kinematics and Dynamics gives evidence of gifts of teaching and of great clearness in the presentation of a subject. His thoroughly able researches have advanced Science. They have one characteristic which produces an especially favourable impression, and in which they differ from those of many other savants, namely, that

they are not confined exclusively to one department, for example, that of electricity, but are distributed over the most diverse departments of Physics and mathematical Physics. This fact gives a guarantee that Mr. MacGregor's knowledge is many-sided, a matter of the greatest importance for a teacher. Mr. MacGregor has been able to carry out these researches even with very moderate appliances. Science, therefore, as well as his pupils, may certainly expect much more excellent work, if, by his being called to a more important post, more adequate appliances are placed at his disposal. This is therefore highly desirable in the interest both of Science generally and of his country.

PROFESSOR DR. EILH. WIEDEMANN,

Editor of "Beiblätter zu den Annalen der Physik und Chemie."

ERLANGEN, 3rd May, 1890.

IX.

From A. W. REINOLD, M. A. (Oxon.), F. R. S., Professor of Physics in the Royal Naval College, Greenwich, Past-President of the Physical Society of London, sometime Examiner in Natural Philosophy in the University of London.

Professor J. G. MacGregor, of the Dalhousie College, Halifax, informs me that he is a candidate for the Chair of Experimental Physics in the McGill College, Montreal.

I think him eminently qualified for the post. It fell to my lot, as Examiner for the University of London,* to examine Mr. MacGregor for his degree of Doctor of Science about fourteen years ago. The fact that the degree was conferred upon him is proof not only of his wide acquaintance with the methods and literature of those branches of Physics to which he has specially devoted himself, but also of considerable experimental skill.

Since that time Professor MacGregor has given evidence by the researches he has carried out, the papers he has published, and his Text-book on Kinematics and Dynamics, of great industry and keen interest in the development and sound exposition of scientific knowledge.

A. W. REINOLD, M. A. (Oxon.), F. R. S.,

*Professor of Physics in the Royal Naval College, Greenwich,
Past-President of the Physical Society of London.*

ROYAL NAVAL COLLEGE,
GREENWICH,

May 15th, 1890.

* In conjunction with the late Professor Balfour Stewart, LL. D., F. R. S.—J. G. M.

X.

From the REV. CANON JOHN PERCIVAL, M. A., LL. D., Head Master of Rugby School, formerly Head Master of Clifton College, Bristol, and President of Trinity College, Oxford.

As I understand that Professor MacGregor is a candidate for the Professorship of Experimental Physics at McGill College, Montreal, I desire to give my testimony in his favour. He was the Chief Master of the Physical Department in Clifton College for some time during my Head Mastership, and he filled the post admirably.

Both as an exponent and as an experimenter, I look upon him as one of the best teachers of Physics I have ever known, and his ability and attainments are sufficiently guaranteed by his London University Degree. I desire also to add, as of no slight importance, that he is a very pleasant man, and wins the respect and affection of both colleagues and pupils.

McGill College will be very fortunate if it secures Dr. MacGregor's services.

J. PERCIVAL,

Head Master of Rugby.

ATHENÆUM CLUB, Pall Mall,

April 30th, 1890.

XI.

From the REV. J. M. WILSON, M. A., F. G. S., Head Master of Clifton College, Bristol, England, late Fellow of St. John's College, Cambridge, Author of "Solid Geometry and Conic Sections," etc.

TO THE COUNCIL OF THE MCGILL COLLEGE, MONTREAL:

Gentlemen,—

My friend, Dr. MacGregor, tells me that he is a candidate for the Professorship of Experimental Physics in your College. Perhaps I may be allowed to bear my testimony to the quite excellent work he did as a Master at Clifton College. He impressed us all as a master in his own subject, as a most inspiring and attractive teacher of boys of all ages from 14 to 19, as a man of wide interests and culture, and as a most delightful colleague. He is known as a man of first-rate ability by the work he has done.

May I add that I speak to some extent as an expert, for I was myself Science Master at Rugby for many years before coming to Clifton College as Head Master, and I was therefore well able to appreciate his work.

If you select him, you are sure of an experienced, successful and attractive teacher, and of a very great addition to your Professorial Staff.

Yours very faithfully,

JAMES M. WILSON,

Late Fellow of St. John's Coll., Cambridge, and Head Master of Clifton College.

CLIFTON COLLEGE,
CLIFTON, BRISTOL,
April 28th, 1890.

XII.

From WILLIAM A. TILDEN, D. Sc. Lond., F. R. S., F. C. S., Professor of Chemistry in Mason College, Birmingham, Examiner in Chemistry to the Universities of London and Cambridge, formerly Chief Lecturer on Chemistry, Clifton College, Author of "An Introduction to Chemical Philosophy," etc.

My friend, Professor J. G. MacGregor, tells me he is about to become a candidate for the Chair of Experimental Physics in McGill College. My acquaintance with him, extending over very many years, entitles me to say that I think him eminently qualified to fill the post with distinguished success.

Dr. MacGregor and I worked together at Clifton for several years, and, my department being Chemistry and his Experimental Physics, I had full opportunity of observing his methods of teaching and examining, and his control over his classes. I am not overstating the case when I say that no more brilliant teacher, no more judicious examiner, ever entered Clifton College, nor one whose departure was more regretted by colleagues and pupils alike.

Dr. MacGregor, since his residence in Canada, has been active in the pursuit of investigation in connection with his subject, and has published a number of able and important papers; so that in every respect, as practised teacher and as investigator of established fame, he possesses complete qualifications for the post he is seeking; and I know no one whom I could so strongly recommend for the Professorship in McGill College.

WILLIAM A. TILDEN, D.Sc. Lond., F. R. S.,

Professor of Chemistry in Mason College, and Examiner in Chemistry to the Universities of London and Cambridge.

THE MASON SCIENCE COLLEGE,
BIRMINGHAM,

28th April, 1890.

XIII.

From J. E. A. STEGGALL, M. A., late Scholar of Trinity College, Cambridge. Professor of Mathematics and Natural Philosophy in University College, Dundee, formerly Mathematical and Physical Master at Clifton College.

My friend, Dr. J. G. MacGregor, tells me he is a candidate for the Professorship of Experimental Physics in the McGill College, Montreal. Under him I worked as a colleague in the Physical Department of Clifton College, ten or eleven years ago. At that time there was little or no physical work done in most English schools, but Dr. MacGregor had already laid the foundation of the excellent physical course which is now developed at Clifton College and elsewhere. With the most scanty resources and in the most limited space, Professor MacGregor managed to awaken the interest and enthusiasm of his students and to carry them on with the best results.

Since then he has published several important physical works, notably his accurate and scientific exposition of dynamical principles, and the careful collation of physical results and constants set forth in his papers on heat and on solutions.

But besides all these qualifications as a teacher and as a physicist, Dr. MacGregor possesses others of equal value in the occupant of the post he seeks. To his clearness of thought he adds a liberality of opinion and a breadth of culture that are so marked as to be unusual; and by his colleagues, pupils and friends, he is always remembered in England and Scotland as one of those men of simple life, of absolute honour and of sympathetic thoughtfulness, that would create and preserve the best precedents and traditions of a Professorial Chair.

J. E. A. STEGGALL,

4 PARK PLACE, DUNDEE,
May 3d, 1890.

XIV.

From H. S. HALL, M. A., formerly Scholar of Christ's College, Cambridge, Senior Master of the Military and Engineering Side of Clifton College, Joint Author of Hall and Knight's "Higher Algebra," etc.

TO THE BOARD OF GOVERNORS OF MCGILL COLLEGE,
MONTREAL.

Gentlemen :

My friend and former colleague, Dr. J. G. MacGregor, has asked me to assist his candidature for the Professorship of Experimental Physics in McGill College, Montreal, and I have much pleasure in doing so.

Of his scientific attainments and the work he has recently done, I feel it is superfluous for me to speak ; on these points you will have abundant testimony from others.

Though it is ten years since Dr. MacGregor left Clifton College, his work and influence are not forgotten. During the last few years the interest in scientific work has largely increased and the facilities for experimental work have been greatly improved and developed. Dr. MacGregor's old colleagues well remember how much he did to encourage and stimulate science teaching at a critical time in the school's history, and how readily he adapted himself to the growing needs of the school in his department. In fact I may say, without hesitation, that during the seventeen years I have been connected with Clifton College, I have known no Master appointed to an important post who has more quickly and successfully grasped the difficulties of our complicated system and so readily gained the confidence of his colleagues and pupils.

As the Senior Master in Physical Science, Dr. MacGregor, in the short space of two years, succeeded in

giving a stimulus to the work of his department which has never since diminished ; he made his mark at once, and left behind him the impress of his skill and genial influence.

Of his personal character it is impossible to speak too highly ; no one can work with him without imbibing some of his vigour and enthusiasm, while he will always be popular both with colleagues and pupils, who will speedily feel entire confidence in his justice, good temper and good sense.

I have the honour to be,

Gentlemen,

Your obedient servant,

H. S. HALL, M. A.,

*Formerly Scholar of Christ's College, Cambridge, Senior Master
of the Military Department of Clifton College.*

CLIFTON COLLEGE, CLIFTON,

May 5th, 1890.

XV.

*From the HON. SIR ADAMS G. ARCHIBALD, K. C. M. G., P. C.,
D. C. L., Q. C., M. P., Chairman of the Board of Governors
of Dalhousie University.*

I learn from Dr. J. G. MacGregor, of Dalhousie University, Halifax, that he is a candidate for the recently established Chair of Experimental Physics at McGill College, Montreal.

The Governors of Dalhousie would regret exceedingly to lose the services of Dr. MacGregor, who has discharged his duties at Halifax to their entire satisfaction; but they feel it would be unjust to that gentleman to allow their high estimate of his ability and qualifications to stand in the way of his promotion to a better position elsewhere.

I consider Dr. MacGregor admirably qualified for the Chair in question. He has established for himself a high position in a kindred Chair in Dalhousie. He is a man of great energy, and possesses in a marked degree the faculty of imparting information to the students attending his classes.

A scholar and a gentleman, he will fill creditably any position that may be given him.

ADAMS G. ARCHIBALD,

Chairman of Board of Governors of Dalhousie.

HOUSE OF COMMONS, OTTAWA,

May 16th, 1890.

XVI.

*From the REV. JOHN FORREST, D. D., F. S. Sc. L., President of
Dalhousie College and University, Halifax, N. S.*

I have known Professor J. G. MacGregor from boyhood. During 1865 and 1866 I had charge of a school in Halifax of which he was a pupil. He was always diligent and successful in his studies, maintaining a first place among a number of very clever boys. In 1866 he entered Dalhousie College as a Student in Arts, and during the whole of his course, maintained an exceptionally high standing, winning First Class distinction in all his classes and first prizes in a large number of subjects, including Mathematics, Chemistry, and Mathematical and Experimental Physics. In 1871 he won a Gilchrist Scholarship, and pursued his studies in Edinburgh and Leipzig. His certificates will shew the work he accomplished at these Universities.

In 1876 he was appointed Lecturer in Natural Philosophy in this University. He held the position for only one year, but gave such entire satisfaction, that when the Munro Professorship of Physics was founded in 1880, he was at once selected to fill the Chair. From that time he has discharged the duties of the Professorship with faithfulness and marked success. The work has been greatly extended, the Physical part of the Honours Course in Mathematics and Mathematical Physics very much increased, and an Honours Course in Experimental Physics and Chemistry instituted.

Dr. MacGregor is a very effective lecturer and successful teacher, possessing in no ordinary degree the power of holding the attention of his students and inspiring them with a love for his subject. He has been most diligent and painstaking in his Laboratory work, sparing neither time

nor effort, and counting nothing a burden that would advance the interests of his students and improve his department.

As a member of Senate and as Secretary of the Faculty of Arts, he has given a great deal of time to the general work of the University. In the yearly preparation of the Calendar, and indeed in all the work of the University he has rendered most efficient help.

I regret exceedingly that he is applying for a position in another University. His removal would be a serious loss to us. I consider him a thoroughly competent and successful Professor, and believe that he will maintain that position for himself wherever he may be called to labour.

JOHN FORREST,

President Dalhousie College and University.

HALIFAX, N. S.,

May 22nd, 1890.

XVII.

*From CHARLES MACDONALD, M. A., Professor of Mathematics in
Dalhousie University, Halifax, N. S.*

My friend, Dr. J. Gordon MacGregor, having asked me for a testimonial in his favour, with a view to the Chair in Physics for which he is now a candidate, I beg to submit the following:—

In his undergraduate course at this College, he was by far the most distinguished student of his year. Accordingly at the Sessional Examinations he stood first in nearly all, if not all, his classes, not only in the subjects of Mathematics and Science, Physical and Metaphysical, but also in the departments of Classics. The Gilchrist Scholarship, which of course he easily won, enabled him to continue to advantage his studies abroad, which he did, henceforth converging his attention specially on Physics. His M. A. Thesis presented to us in due course on an interesting problem in Electricity secured for him, when published, a place of some authority among scientific investigators.

In this College, first as Lecturer and then as Professor,—after he had obtained his Degree of D. Sc. from the London University,—he was with his students popular as a friend, and effective as an Instructor.

He and I have been, now for many years, associated in carrying on an Advanced or Honours Course in Mathematics and Physics, open to students who have already made sufficient progress, in the second half of the undergraduate curriculum. I have thus been associated with Dr. MacGregor more closely than with my other colleagues. For him as a coadjutor and counsellor, I have words of only the highest praise. His Examination Papers in his department are at least as searching and testing as mine in my own. His published volume on Dynamics,—a work

that has been made a text-book in other Colleges as in ours,—indicates his methods and treatment of Physical subjects better and more shortly than anything I can say.

There is one thing of first importance in a Professor, which I may venture to add. I have heard Dr. MacGregor on several occasions lecture on some branch or sub-branch of Physical Science; and as a Lecturer I think him very far indeed above the ordinary scientific man. His style deserves the epithets of vivacious, fluent, clear, accurate, without parentheses and interjected explanations and corrections, vices of expression that so often cling to the style of able and accomplished men of Science, but poor lecturers, and do so much to interfere with the just enlightenment of the listener.

His friends must join him in the wish that he may succeed in his present candidature; but should he do so, to Dalhousie College the loss will be very great. For outside his preceptorial duties, Dr. MacGregor's wise counsel, pleasant manners, punctual business habits, and unlimited capacity and willingness for work, constitute him not only a useful but,—I might almost say,—all but indispensable member of our Faculty.

CHARLES MACDONALD, M. A.,

Prof. Math.

DALHOUSIE COLLEGE, HALIFAX,

May 16th, 1890.

XVIII.

From GEORGE LAWSON, Ph. D., LL. D. (McGill), F. R. S. C.,
McLeod Professor of Chemistry in Dalhousie University,
Halifax, N. S.

It affords me much pleasure to express my opinion of the fitness of my friend and present colleague, Dr. J. Gordon MacGregor, for the new Chair of Physics in McGill College, having had the fullest personal opportunity of judging of his qualifications. While an undergraduate at Dalhousie College he was one of our ablest and most active students, and distinguished himself in a signal manner by the facility with which he gained the highest Class and University distinctions. His subsequent career has been no less marked throughout, not only by ability, but also by constant activity and assiduity such as do not always attend the able man. When Dalhousie's benefactor, George Munro, Esq., of New York, endowed a Chair of Physics, the choice fell upon Dr. MacGregor, and but one feeling prevailed, that no better selection could have been made, a feeling that subsequent years of experience have only tended to strengthen. As Professor MacGregor's colleague, teaching a cognate subject (Chemistry), and enjoying daily intercourse with him during our College Sessions, I have the best means of knowing him to be most indefatigable in the teaching of his classes, sparing no labour to interest and advance his students, and to give them high aims in their studies. He expounds his subject with a clearness that cannot be excelled, and enforces, by precept and example, the necessity of aiming at the nearest possible approach to precision in all experimental work.

Not only in his own department, but in the general work and business of the College, Dr. MacGregor has taken an active part, and the prompt and efficient way in which he has discharged the duties of Secretary of the Faculty of Arts, has often lessened the labour and anxiety of his colleagues. His extensive acquaintance with the systems of other Universities has enabled him to suggest as worthy of adoption several of the improvements that have been introduced into our curriculum during the last few years, among which may be mentioned the Special Science Course, leading to Degree of B. Sc., in which Mathematics, Physics, Chemistry and Modern Languages predominate. It was also on Dr. MacGregor's suggestion that a Special Honours Course was instituted in Experimental Physics and Chemistry, requiring from students laboratory work in both departments. This Honours Course has been carried out with gratifying success.

It is but proper to add that Dr. MacGregor has practically, and in the fullest manner, recognised that the extent of a Professor's duties is not limited by the College walls. He has aided in many ways the scientific, literary, artistic and educational organizations of the City and Province, and has been ever ready to take his part in diffusing throughout the community a taste for, and knowledge of, the truths and methods of Science. He has delivered special lectures to Teachers, and given numerous public lectures and demonstrations throughout the Maritime Provinces, that have been highly appreciated. As President of the Nova Scotian Institute of Science, he has increased the efficiency of that institution to an extent previously unknown, having by his personal exertions, succeeded in bringing it into active correspondence with many of the leading scientific societies throughout the world.

For the reasons stated and others that might be adduced, I can, with the fullest confidence, recommend Dr. J. Gordon MacGregor to the attention of the Board of

Governors of McGill University, as a Professor eminently qualified for the important and responsible post, which they are now called upon to fill. While deeply sensible that his removal from Dalhousie would be a serious loss to our institution and a personal disadvantage to myself, the regret would be lessened by the feeling that he had secured, while (we may hope) there are many years of usefulness before him, a position affording the necessary facilities and encouragements for prosecuting those physical researches for which, as a mathematician and an experimenter, he has shown such aptitude and qualification.

GEORGE LAWSON, Ph. D., LL. D. (McGill),

Professor of Chemistry.

DALHOUSIE UNIVERSITY,
HALIFAX, N. S.,
16th Dec. 1890.

XIX.

From DAVID ALLISON, M. A., LL. D., *Superintendent of Education for the Province of Nova Scotia.*

For the past twelve years I have had some opportunities of estimating the character of the work done by Dr. J. Gordon MacGregor, in his capacity as Professor in Dalhousie College, while I have been able to note, probably as accurately as any one else, his impress on our educational affairs generally. It is my conviction that his withdrawal from his present post would be a very serious loss, not only to his own University, but to the cause of Provincial Education, in which he has always taken a very deep and intelligent interest. The Institution and the community with which Dr. MacGregor may be connected, are sure of having at command not only scientific erudition of a high order, but a most active and helpful sympathy with all forms and phases of educational progress. In the important fields of industrial and art education he has performed for the Province much invaluable pioneer work.

Leaving it to others who possess special right to speak, to testify of Dr. MacGregor's scholarship and "aptness to teach," I content myself with expressing the confident belief that they are more than adequate for any position to which he may aspire.

DAVID ALLISON,

Superintendent of Education.

EDUCATION OFFICE,
HALIFAX, N. S.,
May 27th, 1890.

XX.

From ALEXANDER MCKAY, Supervisor of Schools for the City of Halifax and Secretary of the Nova Scotian Institute of Science.

For some years I have been closely associated with Dr. MacGregor in several kinds of work, and have had exceptional opportunities of forming a judgment of him both as a Professor and in other capacities.

Some of the most successful of the students who have passed through his classes were at one time pupils of my own; and I know from them that his teaching has been most acceptable both to themselves and to all associated with them in the same studies.

At my request as Supervisor of Schools, he gave a course of lectures to the teachers of the City. The attendance was large, and the unanimous opinion of his critical audience was the same as my own, that he is a clear and accurate reasoner, who is never carried away by theory, that his lectures are given in as popular a style as his subject will admit of, without loss of scientific accuracy, and that his methods of teaching embrace the most modern improvements.

As the President of the Institute of Science, he has shewn extraordinary business capacity,—an energy and method that allowed not even the minutest details to be forgotten. In fact, the present flourishing state of our Institute is due entirely to him.

I have been associated with Professor MacGregor also in the directing of the affairs of the "Victoria School of Art and Design", and of the "Halifax Ladies' College," for the last three years, and can testify to the readiness with

which he has given time and energy to the development of their usefulness, and his value as a Director.

It is with regret that I learn that he intends to apply for a Professorship elsewhere, as I hoped that my own son would, next year and until he graduated, have the good fortune to be taught by him. But I feel that Dr. MacGregor is deserving of a higher position and capable of filling it with credit to himself, satisfaction to his employers and advantage to the community in which he may live.

A. MCKAY, Sec. N. S. I. S.,

Supervisor of Halifax Schools.

OFFICE OF SCHOOL COMMISSIONERS,
HALIFAX, N. S.,
19th May, 1890.

XXI.

*From the late REV. PROF. PHILIP KELLAND, M. A., F. R. S.,
V.-P. R. S. E., Professor of Mathematics in the University of
Edinburgh, Author of "The Theory of Heat," etc.*

(GIVEN ON A FORMER OCCASION.)

As one of the Vice-Presidents of the Royal Society of Edinburgh, I have had several opportunities of noticing Mr. MacGregor as one of the younger workers in the advance of the Physical Sciences. Mr. MacGregor has appeared amongst us on several occasions as the contributor of an original investigation. In particular, there is printed in our Transactions a paper by him, in conjunction with Mr. Ewing, "On the Conductivity of certain Saline Solutions," which is in itself a sufficient testimonial to Mr. MacGregor's standing as a Physicist. His other papers, "On the Electrical Conductivity of Stretched Silver Wires," and "On the Electric Conductivity of Nickel," add to his claims, and promise to be the harbingers of a distinguished career. I may add that Mr. MacGregor's personal appearance and address are greatly in his favour, and I confidently recommend him for the Lectureship on Experimental Physics for which he is a candidate.

PHILIP KELLAND, F. R. S., V.-P. R. S. E.

20 CLARENDON CRESCENT,
EDINBURGH,
June 20th, 1876.

XXII.

From G. CHRYSTAL, M. A., LL. D., V.-P. R. S. E., late Fellow and Lecturer of Corpus Christi College, Cambridge, Professor of Mathematics in the University of Edinburgh, Author of the Articles Electricity and Magnetism in the Encyclopædia Britannica, "Text Book of Algebra," etc.

It gives me great pleasure to say a word in favour of Mr. J. G. MacGregor, who is, I am glad to hear, a candidate for the newly founded Chair of Experimental Physics in the McGill College, Montreal.

I am well acquainted with some of Mr. MacGregor's experimental work and think highly of it. It affords ample guarantee that the resources of a well-equipped laboratory would not be wasted in his hands.

Mr. MacGregor is a pointed thinker and a lucid writer on scientific subjects ; and it would be strange indeed if his fluent style and vivacious manner did not make him a successful Professor.

From what I have seen of his frank and manly character, I am confident that Mr. MacGregor would be an agreeable colleague and an effective helper in the conduct of academic business.

G. CHRYSTAL,

Prof. Math, Univ. Edinb.

2ND MAY, 1890,
THE BULL HOTEL,
CAMBRIDGE.

XXIII.

*From J. A. EWING, B. Sc., F. R. S., Member of Council R. S. E.,
Professor of Engineering in University College, Dundee, formerly
Professor of Mechanical Engineering and Physics in the
University of Tokio, Japan, Author of the Article "Steam
Engine" in the Encyclopædia Britannica, etc.*

It gives me great pleasure to support the candidature of Professor J. G. MacGregor for the Chair of Experimental Physics in McGill College. I know Professor MacGregor well,—personally and professionally,—and can speak with assurance as to his fitness in every respect for a Chair of Physics. He combines the qualifications of teacher and of experimentalist in a very high degree.

I have been associated with him in physical research, and have been struck with his experimental aptitude, his ingenuity in planning methods, his thoroughness and intolerance of inconclusive work, his enthusiasm in attacking a problem and his patience in following up whatever he undertakes. From his long laboratory training under Tait and Wiedemann, from his exceptionally wide acquaintance with the literature of Physics, and above all from his own zeal for research and skill in it, he is just the man to be the Director of a physical laboratory. He has devoted himself especially to electricity; his numerous papers in the Transactions of the Royal Societies of Edinburgh and of Canada, published while he has been Professor at Dalhousie College, bear witness to his sound knowledge of that subject, and show him able to obtain valuable new results though hampered by the want of adequate appliances. Several of his papers contain the fruits of work

done by giving up his summer' vacations to research in the Edinburgh Laboratory.

He has every qualification of a successful teacher,—mastery of his subject, experience, exceptional lucidity and exactness in exposition (his book on Kinematics and Dynamics is almost unique among elementary text-books in precision and freedom from assumptions), a fluent style, and a rare personal attractiveness. He is universally popular with all who work with him.

I have no hesitation in saying that McGill College will be very fortunate if it secures him as one of its Professors.

J. A. EWING, B. Sc., F. R. S.,

Professor of Engineering in University College, Dundee.

UNIVERSITY COLLEGE,
DUNDEE,

April 28th, 1890.

XXIV.

From C. MICHIE SMITH, B. Sc., F. R. S. E., F. R. A. S., Professor of Physical Science in the Madras Christian College, and Fellow of the Madras University.

MY DEAR MACGREGOR:

You ask me to say something in support of your application for the new Professorship of Physics in Montreal; and though I feel that nothing that I can say can be of much use to one whose scientific work has become so well known, I gladly add my testimony from personal knowledge.

Since we worked together in Professor Tait's Laboratory and I learned much from your habits of painstaking accuracy, I have always followed with interest the progress of your experimental researches. These researches have been carried on under considerable difficulties, but have led to most valuable results, and have shewn marked evidence of experimental skill and of that determined following up of apparently trivial deviations from expected results which is the essential characteristic of a successful investigator. Knowing from my own experience how little time your teaching can leave you for research, I often wonder how you are able to produce so much original work, while the quality of this work makes one wish that you had greater facilities for carrying it on.

Of your published work on Kinematics and Dynamics it is quite unnecessary for me to write; but I cannot refrain from saying that I welcomed its appearance as a most valuable help both to Professors and students, and that I have found it more than equal to my expectations.

I would only say in conclusion that I will consider McGill College extremely fortunate if it secures your services.

Yours very sincerely,

C. MICHIE SMITH,

CAMBRIDGE,
30th April, 1890.

XXV.

From ALEXANDER MACFARLANE, M. A., D. Sc., LL. D., F. R. S. E.,
Professor of Physics in the University of Texas, Author of
"The Algebra of Logic," "Physical Arithmetic," etc.

I have known Professor MacGregor for fifteen years. At the University of Edinburgh we sat on the same bench in the class-room of Logic and Metaphysics, we were members of the same Debating Society, we were simultaneously engaged in making researches in the Physical Laboratory under the same illustrious master—Professor Tait,—and we attended together the meetings of the Royal Society of Edinburgh, first as student visitors or contributors, afterwards as Fellows.

Dr. MacGregor was an exceptionally brilliant student, not only in his specialty of physical Science, but also in other departments, such as logic and philosophy. He is an exceedingly clear and logical speaker and writer; he has not only the knowledge and skill of the specialist, but also linguistic and logical accomplishments which enable him to communicate that knowledge effectively to others. He has had the advantage of studying abroad, not only in Great Britain but also in Germany.

At a very early age he contributed physical researches to the Royal Society of Edinburgh, which were printed in their Transactions; and since then he has contributed a succession of papers to their Transactions and the Transactions of the Royal Society of Canada. The work by which he is best known in the scientific world is his Treatise on Kinematics and Dynamics, published by Macmillan & Co., of London. It is a very thorough work, known not only in America and Great Britain, but also on

the continent of Europe. Soon after its publication it was made the special subject of discussion at a meeting of the Physical Society of Berlin.

By electing Dr. MacGregor the McGill College will obtain a scholar of extensive culture, a teacher of great logical power, a scientist who is in the front rank in his own department of Experimental Physics.

ALEXANDER MACFARLANE,

Professor of Physics, University of Texas.

AUSTIN, TEXAS,
10th May, 1890.

XXVI.

From R. BÖRNSTEIN, Ph. D., Professor of Physics and Meteorology in the Royal Agricultural College, Berlin, Joint Author of Landolt and Börnstein's "Physikalisch-Chemische Tabellen," etc.

Herrn Professor J. G. MacGregor habe ich im Jahre 1874 im Laboratorium des Herrn Professor Wiedemann zu Leipzig kennen gelernt. Auf grund unseres persönlichen Verkehrs und seiner seither veröffentlichten Arbeiten, halte ich Herrn MacGregor für einen kenntnissreichen und geschickten Physiker.

DR. R. BÖRNSTEIN,

Professor der Physik und Meteorologie an der Königlichen landwirthschaftlichen Hochschule zu Berlin.

BERLIN,

den 29. April, 1890.

(TRANSLATION.)

I became acquainted with Professor MacGregor in Professor Wiedemann's Laboratory at Leipzig in the year 1874. On the ground of our personal intercourse and of the researches which he has since published, I consider Mr. MacGregor a learned and skilful Physicist.

DR. R. BÖRNSTEIN,

Professor of Physics and Meteorology in the Royal Agricultural College of Berlin.

BERLIN,

29th April, 1890.

XXVII.

From E. MASCART, Director of the Central Meteorological Office, Paris, formerly Professor of Physics in the Collège de France, Honorary Member of the Physical Society of London, Joint Author of Mascart and Joubert's "L'Electricité et le Magnétisme," Author of "Traité de l'Electricité Statique," etc.

MR. MACGREGOR, Halifax.

Monsieur :

En m' informant que vous êtes candidat à la chaire de physique de McGill Collège à Montreal, vous voulez bien me demander mon appréciation sur l'autorité de vos publications scientifiques.

Je regrette vivement que l'abondance des matières que nous avons à traiter dans notre ouvrage sur l'Electricité et le Magnétisme et l'obligation de restreindre beaucoup trop la partie expérimentale, ne nous ait pas permis d'insister davantage sur vos travaux. Les recherches sur l'électrolyse en particulier et sur les courants thermoélectriques demanderaient à être exposées avec plus de détails et nous aurions sous ce rapport beaucoup à emprunter à vos mémoires qui sont faits avec tant de soin et de clarté. Si nous sommes amenés bientôt à préparer une seconde édition de notre traité, nous avons l'intention d'abrégier beaucoup la partie théorique, qui est aujourd'hui mieux connue, et de nous étendre davantage sur les questions expérimentales. Vos travaux y trouveront alors une place mieux en rapport avec leur mérite que nous n'avons que le faire.

Je suis donc assuré d'avance que si la fonction que vous sollicitez vous est accordée l'enseignement sera à la hauteur de la science actuelle.

Veuillez agréer, monsieur, l'assurance de ma considération la plus distinguée.

E. MASCART.

BUREAU CENTRAL MÉTÉOROLOGIQUE,
PARIS,

11 Mai, 1890.

(TRANSLATION.)

Sir:

In informing me of your candidature for the chair of Physics in the McGill College, Montreal, you ask me to express my opinion on the value of your scientific publications.

I regret very much that the abundance of the material with which we had to deal in our work on Electricity and Magnetism, and the necessity of confining the experimental part within far too narrow limits, did not permit us to lay more stress on your work. Researches on Electrolysis in particular, and on thermoelectric currents ought to have a more detailed exposition; and for this purpose we would have to borrow largely from your memoirs, which have been prepared with so much care and clearness. If it is soon found necessary to bring out a second edition of our treatise, we intend to make the theoretical part, which is to-day the better known, much shorter, and to give ourselves more scope on experimental questions. Your researches will then find in it a place more in accordance with their merit than we have been able to give them.

I feel sure therefore, beforehand, that if you are appointed to the position for which you are a candidate, your teaching will be up to the level of the present state of science.

Please accept, sir, the assurance of my very great regard.

E. MASCART.

CENTRAL METEOROLOGICAL OFFICE,
PARIS,

11th May, 1890.

XXVIII.

From J. D. EVERETT, M. A., D. C. L., F. R. SS. L. & E., Professor of Natural Philosophy in Queen's College, Belfast, Translator and Editor of Deschanel's "Natural Philosophy," Author of "Vibratory Motion and Sound," etc.

I am familiar with the name of Professor MacGregor of Halifax as a man of energy and ability.

Before he went to Nova Scotia he had performed in conjunction with Professor Ewing, some valuable experimental work in the measurement of electrical resistance, the results of which I have embodied in my "Units and Physical Constants." He has since published a well known book on Dynamics, which is characterised by clearness of language and exhibits intimate acquaintance with modern methods of treatment.

I regard Professor MacGregor as an eminently suitable candidate for the Chair of Experimental Physics in McGill College.

J. D. EVERETT, F. R. S.,

*Professor of Natural Philosophy in
Queen's College, Belfast.*

BELFAST,

May 5th, 1890

XXIX.

From ANDREW GRAY, M. A., F. R. S. E., *Professor of Physics in the University College of North Wales, Author of "Absolute Measurements in Electricity and Magnetism," etc.*

I have much pleasure in supporting the candidature of Prof. J. G. MacGregor, D. Sc., for the Chair of Experimental Physics in the McGill College, Montreal. His published papers and especially his Treatise on Kinematics and Dynamics shew that he is a man of great mental activity and intellectual grasp. His knowledge of physical science seems to me to be firmly grounded on the only sure foundation, a thorough appreciation of the fundamental principles of Dynamics, and familiarity with the subject matter and mathematical processes of that science. The book I have mentioned seems to me excellent in all respects. It is clear, elegant and concise, and accomplishes well the very difficult task of lucidly placing before the learner, with carefully selected illustrative examples, elementary dynamical laws and principles with their most important developments. My colleague, Prof. G. B. Matthews* (Professor of Mathematics) informs me that he has recommended this book for particular students and has also formed a high opinion of its merits.

I have had the pleasure of meeting Prof. MacGregor personally, and though I have not heard him speak in public, I should judge from his ordinary mode of expressing himself that he would be a clear and able lecturer.

ANDREW GRAY, M. A.,

*Professor of Physics in the University College
of North Wales.*

UNIVERSITY COLLEGE OF NORTH WALES,
BANGOR,

May 6th, 1890.

* Senior Wrangler of 1888.—J. G. M.

XXX.

*From E. A. LETTS, D. Sc., Ph. D., F. R. S. E., F. C. S., etc.,
Professor of Chemistry in Queen's College, Belfast.*

I have great pleasure in expressing my sense of Prof. J. G. MacGregor's high qualifications for the recently founded Chair of Experimental Physics in the McGill College, Montreal.

It has been my good fortune to have known him since he was a student, and I can bear testimony to his great abilities, to his love of his subject, to his capacity as a teacher, and in especial to his skill as an experimenter and original observer.

In one way I regret that he is applying for the Montreal Chair, as I had always hoped he would gravitate to a high Professorial appointment in the mother country.

E. A. LETTS,

*D. Sc., Ph. D., F. R. S. E., F. C. S. &c.,
Professor of Chemistry.*

QUEEN'S COLLEGE,
BELFAST,
May 5th, 1890.

XXXI.

*From A. M. WORTHINGTON, M. A., F. R. A. S., Professor of
Physics and Head Master of the Royal Naval Engineers'
College, Devonport, formerly Senior Master in Physics, Clifton
College.*

ROYAL NAVAL ENGINEERS' COLLEGE,
DEVONPORT,

May 5th, 1890.

MY DEAR MACGREGOR:

I have just received your letter saying that you intend to become a candidate for the Chair of Physics at the McGill College at Montreal, and asking for a word of support in your application.

This I can give most heartily and I think with a pretty good knowledge of your work; for I know exactly the lasting mark you made at Clifton College by your vigorous teaching; I have read all or very nearly all of the Physical papers you have written since you were in Halifax, and which no one who wishes to keep himself well informed can afford to neglect; and lastly I have made much use in my teaching of your book on Dynamics, in respect of which I am very glad to have this opportunity of expressing my gratitude. It excels in clearness and is conspicuous for the unflagging care shown on every page from first to last. It is a book on a subject most difficult to handle, that none but a most accomplished and experienced teacher could possibly have written.

I understand that the Physical Laboratory at Montreal will be a good one. If it falls to you to direct, as I hope it may, it will be in good hands, and the electors may feel

confident that researches of the highest standard will be vigorously pushed forward there. I really do not think that any one of the younger generation of teachers could be named in this country as likely to do better work than yourself.

Believe me,

Yours very truly,

A. M. WORTHINGTON, M. A., F. R. A. S.,

*Professor of Physics and Head Master of the Royal Naval
Engineers' College, Devonport.*

Professor J. G. MacGregor,

XXXII.

From W. L. GOODWIN, D. Sc. (EDIN.), B. Sc. (LOND.), Professor of Chemistry in the Queen's University, Kingston, Ont., Author of "A Text Book of Chemistry," etc.

Professor J. G. MacGregor has been known to me since 1877. His career both as a student and as a teacher of Science has been eminently successful; and he has added to his attainments in Science that broad culture, without which a University teacher is at a decided disadvantage.

In every thing which he has undertaken Dr. MacGregor has shown the clearness of thought, keenness of mental vision and regulated enthusiasm which are so essential to success in both investigation and teaching.

Dr. MacGregor has the reputation of an exceptionally good lecturer; and he has done much to excite an interest in Science in Nova Scotia.

His kindly disposition and his knowledge of affairs combine to give to Dr. MacGregor peculiar fitness for a seat in a University Senate.

Dr. MacGregor has done valuable work in his chosen department of Science,—work which has been recognized in the leading physical publications of the world; and I believe him to be possessed of the manipulative skill and the scientific imagination which enable their possessor to do the highest kind of work in experimental science.

I have no hesitation in recommending Dr. MacGregor to be appointed to the chair of Physics about to be founded in McGill University.

W. L. GOODWIN,
D. Sc. (Edin.), B. Sc. Lond.),
Professor of Chemistry.

QUEEN'S UNIVERSITY,
KINGSTON, ONT.,
May 14th, 1880.

XXXIII.

From JOHN TROWBRIDGE, S. D., Professor of Physics, Harvard University, Cambridge, Mass., Corresponding Member of the British Association, etc.

MY DEAR PROFESSOR MACGREGOR:

I sincerely trust that you may obtain the chair of Experimental Physics in McGill University. I have always read your papers with great interest; and I feel sure that you would build up the department of Experimental Physics, and would contribute to the scientific reputation of the University at Montreal.

I have no objection to your showing this note, if in your opinion, it will further your claims to be considered a candidate for the position.

Very truly yours,

JOHN TROWBRIDGE.

CAMBRIDGE,
May 6th, 1890.

XXXIV.

From EDWIN H. HALL, Ph. D., Assistant Professor of Physics in Harvard University, Cambridge, Mass., formerly Fellow of Johns Hopkins University, Baltimore, Corresponding Member of the British Association, Author of "Elementary Ideas, Definitions and Laws in Dynamics," etc.

TO THE GOVERNORS OF MCGILL UNIVERSITY.

Gentlemen :

Prof. MacGregor, of Dalhousie College, Halifax, has informed me that he is a candidate for the Chair of Experimental Physics in McGill College, and has asked me to make known to you my opinion of his qualifications for the place. Having for a number of years been somewhat acquainted with Prof. MacGregor and with his writings, I take pleasure in saying that I consider him a well-trained, intelligent and forcible man, admirably fitted for the work of the position for which he is a candidate.

I am able to add that B. O. Peirce,* Professor of Mathematical Physics in Harvard College, has lately examined Prof. MacGregor's book on Dynamics and has formed a favorable impression of the author.

Respectfully yours,

EDWIN H. HALL,

Ast. Prof. of Physics in Harvard College.

HARVARD COLLEGE,
CAMBRIDGE, U. S.,
May 15th, 1890.

* Author of "Theory of the Newtonian Potential Function," etc.

XXXV.

From EDWARD L. NICHOLS, B. S., Ph. D., *Professor of Physics,*
Cornell University, Ithaca, N. Y.

I have known Professor J. G. MacGregor for some twelve years. When I made his acquaintance he was regarded in Edinburgh and at the German Universities as a young Physicist of uncommon promise; since which time my admiration of his powers as an investigator has been increased by reading one valuable contribution to Experimental Physics after another from his pen.

Of his success as a teacher I have heard many most favorable opinions from those who have been his colleagues at Dalhousie College, and from students who after having been pupils of his, have chanced to come under my own instruction.

It gives me great pleasure to state that I know of no man in America whom I deem better qualified to hold an important position in Physics than is Dr. MacGregor.

EDW. L. NICHOLS,

Professor of Physics in Cornell University.

ITHACA, N. Y.,
May 7th, 1890.

XXXVI.

From T. C. MENDENHALL, Superintendent of the U. S. Coast and Geodetic Survey, Washington, D. C., formerly Professor of Physics in the Ohio State University, Columbus, Ohio.

I take pleasure in saying that a familiarity with much of the work of Professor MacGregor of Dalhousie College has given me a high opinion of his ability as a Physicist. I regard him as clear in his perception of fundamental principles and skilled in experimentation. I have no doubt he would add strength to any Faculty of Instruction with which he might be associated.

T. C. MENDENHALL,

Supt. U. S. Coast and Geodetic Survey.

WASHINGTON, D. C.,
May 7th, 1890.

XXXVII.

From A. L. KIMBALL, A. B., Ph. D., Associate in Physics, and formerly Fellow, of Johns Hopkins University, Baltimore, Author of "The Physical Properties of Gases," etc.

PROF. J. G. MACGREGOR,

Dear Sir:

I am glad to learn that you are a candidate for the Chair of Physics at McGill College, and hope you will secure the appointment; for though we have never met personally, I have heard of you so often indirectly through your students that I feel we are not entire strangers. I can testify to the warm appreciation which your students express for you as a teacher, and from what I know of the excellence of your book on "Kinematics and Dynamics," I can well believe this to be the case. Your book I have known for some time and most favorably; and from what I know through your scientific papers of the work which you have been able to do, with the limited facilities at your disposal, I believe you would put to good use the fuller opportunities for research afforded by the Laboratory at McGill College.

It would therefore give me great pleasure to learn that so important a chair as that at McGill College is to be in such good hands, and I sincerely hope you may be appointed to it.

Very truly yours,

ARTHUR L. KIMBALL.

JOHNS HOPKINS UNIVERSITY,
BALTIMORE,
May 26th, 1890.

XXXVIII.

*From A. E. KENNELLY, Electrician, Edison's Laboratory, Orange,
N. J.; Associate of the Institution of Electrical Engineers,
New York.*

I have not the pleasure of being personally acquainted with Professor J. G. MacGregor, and know him only through having read many of his papers on physical Science, as also through the correspondence I have had with him on their subjects. I consider him to be pre-eminently gifted as a physicist, and especially as an experimental physicist. His papers are models of graphic precision and scientific accuracy, while his text book on "Kinematics and Dynamics," for an elementary treatise, is both masterly and comprehensive. There are, in my opinion, few men so well qualified by their scientific attainments as he, to fill with honor that post which it is his aim, and my sincere wish, he may obtain.

A. E. KENNELLY,

Electrician.

ORANGE, N. J.,
4th May, 1890.

XXXIX.

From CARL BARUS, Ph. D., *Physical Laboratory, U. S. Geological Survey, Washington, D. C.*

PROF. J. G. MACGREGOR, M. A., &c.,
Halifax, N. S.

My dear Sir:

It gave me much pleasure to learn that you are a candidate for the chair of Experimental Physics of McGill College, and I believe the Institution would be fortunate in securing your services.

I first heard of you some years ago through Professor Kohlrausch. In those of your papers which have come immediately under my attention, I appreciated the conscience, industry and wide physical reading which your work shows. Having perused your "Kinematics and Dynamics" with profit myself, I can cheerfully repeat the good opinions which readers better qualified to judge its immediate merits than I am, perhaps, have already pronounced in its favor.

Dear Sir, I am,

Sincerely Yours,

CARL BARUS.

WASHINGTON, D. C.,
May 12th, 1890.

XL.

From C. A. PERKINS, Ph. D., Associate in Physics in the Bryn Mawr College, Bryn Mawr, Pa., formerly Assistant and Fellow in Physics in the Johns Hopkins University, Baltimore.

Understanding that Prof. MacGregor, of Dalhousie College, is a candidate for the Chair of Physics in McGill College, I take occasion to express my opinion of his thorough fitness for the position.

Though not personally acquainted with Prof. MacGregor, his name has been for some time familiar to me as author of a valuable and decidedly successful book on Kinematics, and his work in experimental Physics also assures ability and skill in that line.

From what I know of his work, I do not hesitate to recommend him as thoroughly qualified for the Chair and a decided addition to the teaching staff of the College.

CHAS. A. PERKINS,

*Associate in Physics, Bryn Mawr College,
Bryn Mawr, Penn.*

BRYN MAWR,
May 23rd, 1890.